

TEST PLAN PROPOSAL:

SUBMITTED BY: Aaron Nissen
DEPARTMENT: Technical Services
DATE: 04/14/92 rev 0

WHAT: A. NIGHTS: Unit 1 Boiler CLEARANCE changed to OK TO for
Air Flow Balance Testing through all 48 Burners.

Note: All burner elbows are removed (required for testing).

B. DAYS: OK TO changed back to CLEARANCE: To complete **Burner Work**

- 1) Set and tack weld outer register shrouds in to final position (as determined from test)
- 2) Set final positions on outer register linkage
- 3) Remaining Fireside Boiler and Air Heater work completed.

WHERE: Unit 1 Burner Air Flow Balance Testing is scheduled to be conducted at the end of the Spring '92 Outage, 4/21-24/92.

The burner air flow testing, conducted during the night shift, will be done from outside the windbox, with access through the elbow, to gain access to the burner front.

The remaining burner installation work and boiler and air heater work will be completed during the day shift.

WHO: A. AIR FLOW TESTING

LEAD: Aaron Nissen (ext 6482, home- 864-3810), Garry Christensen, Dave Spence, and Gifford Broadwick (RJM Corp).

B. BURNER WORK

- 1) Shrouding- Cecil James + Maintenance Support (4)
- 2) Register Settings- Garry Christensen, Aaron Nissen
- 3) Elbow Replacement- Bob Archibald

WHEN: Current Schedule:

4/21 Tues,	17:30, <u>All Personnel</u> to release Fireside Boiler CLEARANCE
	17:30-19:00, Operations to make Tag changes to Fireside OK TO
	19:00, A Nissen or G.Christensen to pick up OK TO to conduct Boiler Air Flow Balance Test (no other air or gas path work allowed).
4/22, Wed,	05:30, Air Flow Testing completed for the night, OK TO released
(4/23, Thur),	05:30-07:00, Tag changes
(4/24, Fri)	07:00, Boiler CLEARANCE picked up to complete boiler work
	17:30, All Personnel to release Fireside Boiler CLEARANCE
	17:30-19:00, Operations to make Tag changes to Fireside OK TO
	19:00, Pick up OK TO to conduct Boiler Air Flow Balance Test (no other air or gas path work allowed).
4/25 Sat,	05:30, Air Flow Testing <u>completed</u> , OK TO released
	07:00, Boiler CLEARANCE picked up to complete <u>ELBOW INSTALLATION</u>

NOTE: Starting date of 4/21/92 for the Air Flow balancing is fixed due to the availability of the testing contractor, RJM Corporation.

IP7_002294

WHY: A. Burner Air Flow Testing

Air flow testing is being conducted on each burner to determine the amount of secondary air flow thru the inner (spin) and outer registers. Based on these test results, air flow imbalances can be identified for resolution. We are primarily concerned about flow imbalance in the following areas:

- a. flow thru each burner - amount of outer air vs the inner air flows and the amount of balance on the perimeter loading around each burner
- b. burner to burner balance - determine air flow balance to each burner (6) across the windbox (where neither the outer burners are starved while i/s or inner burners are starved while the pulverizer is o/s)
- c. row to row balance - evaluate the flow balance from one pulverizer burner row to the next. Concerned with more air flow to the front wall than the back and starved air flow to the bottom rows (more air flow to the upper rows).

HOW: A. Burner Air Flow Testing

The test plan has been reduced to consist of one 16 hour burner balance baseline test. This will provide information for baseline conditions and info to make one set of adjustments on burner shroud settings.

Test conditions are to simulate boiler baseline test conditions with 100% air flow thru all eight rows of burners.

A validation test will also be conducted on one burner row (6 burners) with the secondary air dampers set to 30% to simulate an out of service condition. This test will determine flow conditions with typical cooling air flows.

Testing is conducted with 1- 3 man test crews with test probes traversing either the inner (spin) or the outer register openings to the furnace. Access is gained through the coal nozzle with a jig assembly inserted to support the test equipment. Test probes are a hot wire anemometer style probe utilizing a 24 point traverse around the perimeter of both the inner and outer flow paths.

Test equipment is being provided by RJM Corp.

SETUP AND OPERATIONAL REQUIREMENTS:

A. Burner Air Flow Testing

SETUP

1. Bottom ash seal trough needs to be filled with water
2. All burner elbows remain removed
3. All air and gas path doors closed (boiler, windbox, air and side gas ducts, etc)

NOTE: No other air and/or gas path work allowed due to air flow conditions present.

4. Proven Air Path with 2 FD fans, 4 ID fans available and 4 scrubber modules with dampers open
5. BOUNDARIES (min)- DNO's on fuel oil pumps, pulverizers (control room switch and motor breaker) and PA fans(control room switch and motor breaker)
CAUTION on FD and ID fans.

TEST CONDITIONS

Conditions to simulate IGS baseline boiler test

1. All eight sets of windbox dampers open 55.0% (Fox 1A)
2. Total Air Flow of ~70.0% (CCS), stable constant flow

Tests will start on top backwall and progress down, then move to front top and again work down (1st-Pulv D, 2nd- H, 3rd- C, 4th- G, 5th- E, 6th- A, 7th- F & 8th- B)

Validation Test Condition (repeat test on last burner row tested Pulv-B)

3. Seven windbox dampers open, other windbox dampers closed to 30%

B. BURNER WORK

1. Windbox doors opened
2. BOUNDARIES (min)- DNO's on fuel oil pumps, pulverizer (Control room switch and motor breaker), FD fans